Environmental Health Inspection Data: A Gold Mine for Surveillance and Prevention

Forty-Third Navy Occupational Health
and Preventative Medicine Workshop
Virginia Beach, VA
24 MAR 2004

CAPT Charles S. Otto, III, USPHS

National Center for Environmental Health
Division of Emergency and Environmental Health Services
Environmental Health Services Branch

CDC

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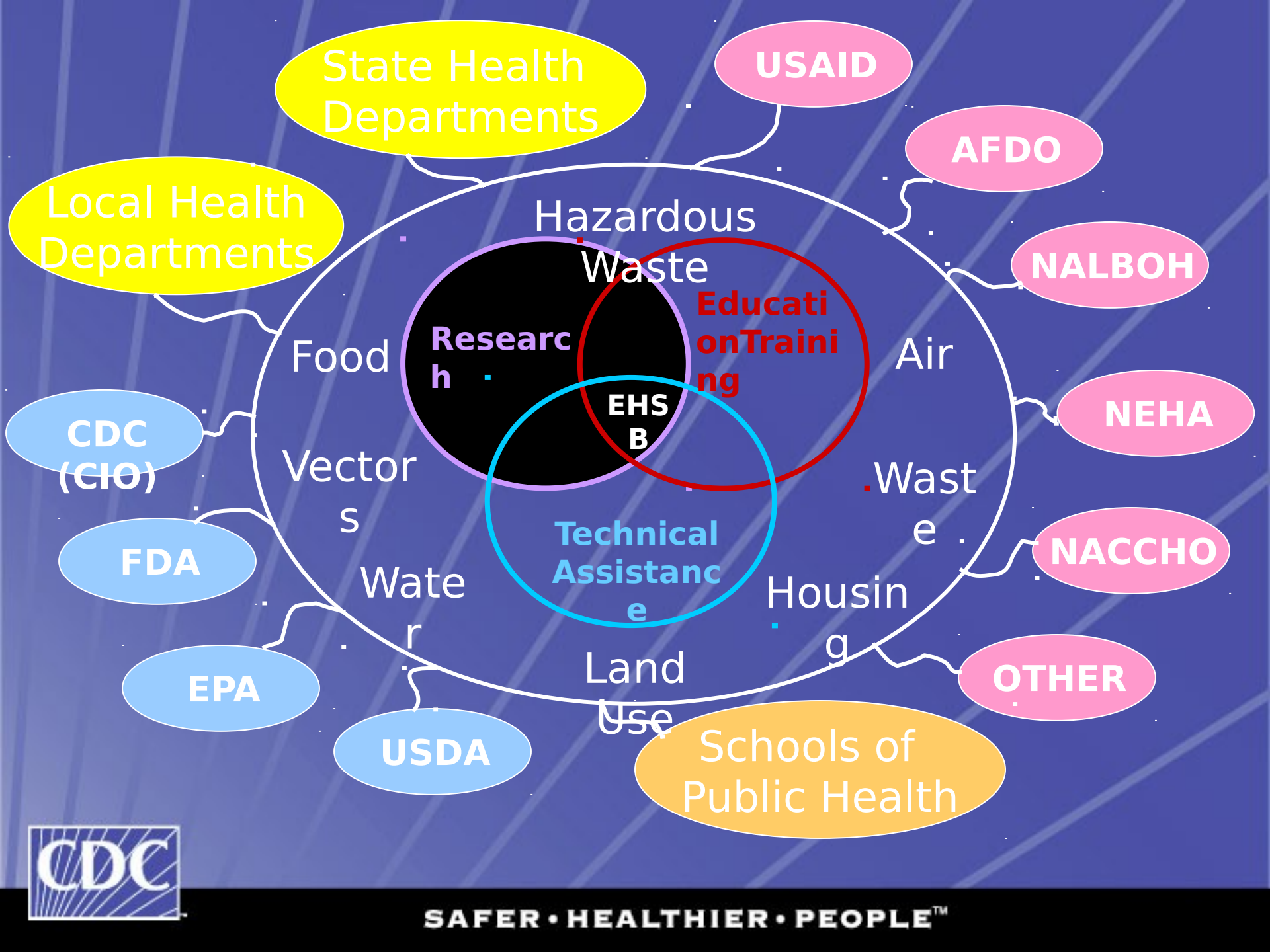
Who / Where Are We?

- Centers for Disease Control & Prevention
- National Center for Environmental Health / ATSDR
- Emergency and Environmental Health Services
- Environmental Health Services


State Health Departments
USAID
AFDO
Local Health Departments
Hazardous Waste
NALBOH
Research
EducationTraining
Food
Air
EHSB
CDC (CIO)
NEHA
Vectors
Waste
Technical Assistance
FDA
NACCHO
Water
Housing
EPA
OTHER
Land Use
USDA
Schools of Public Health
CDC
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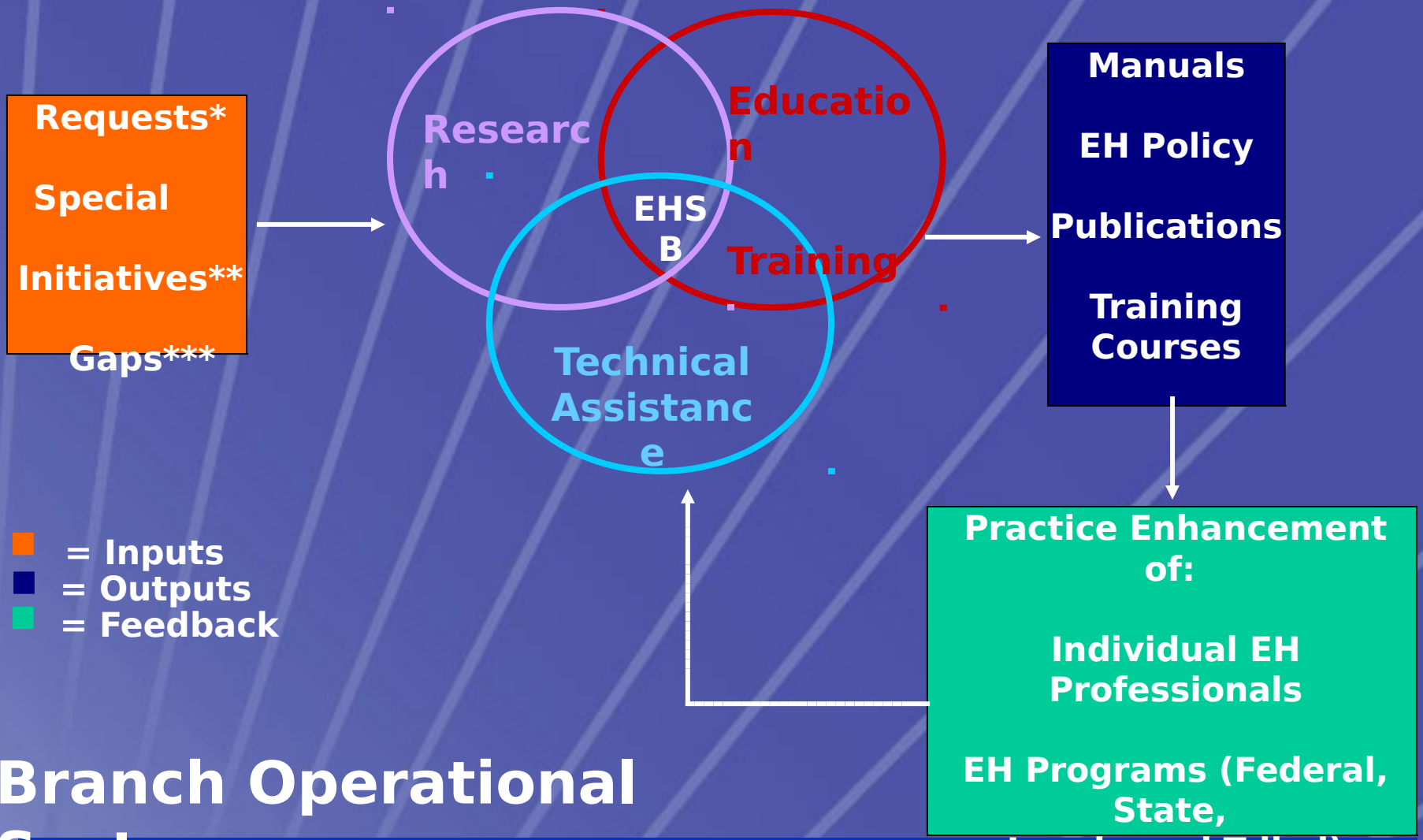
Branch Operational System

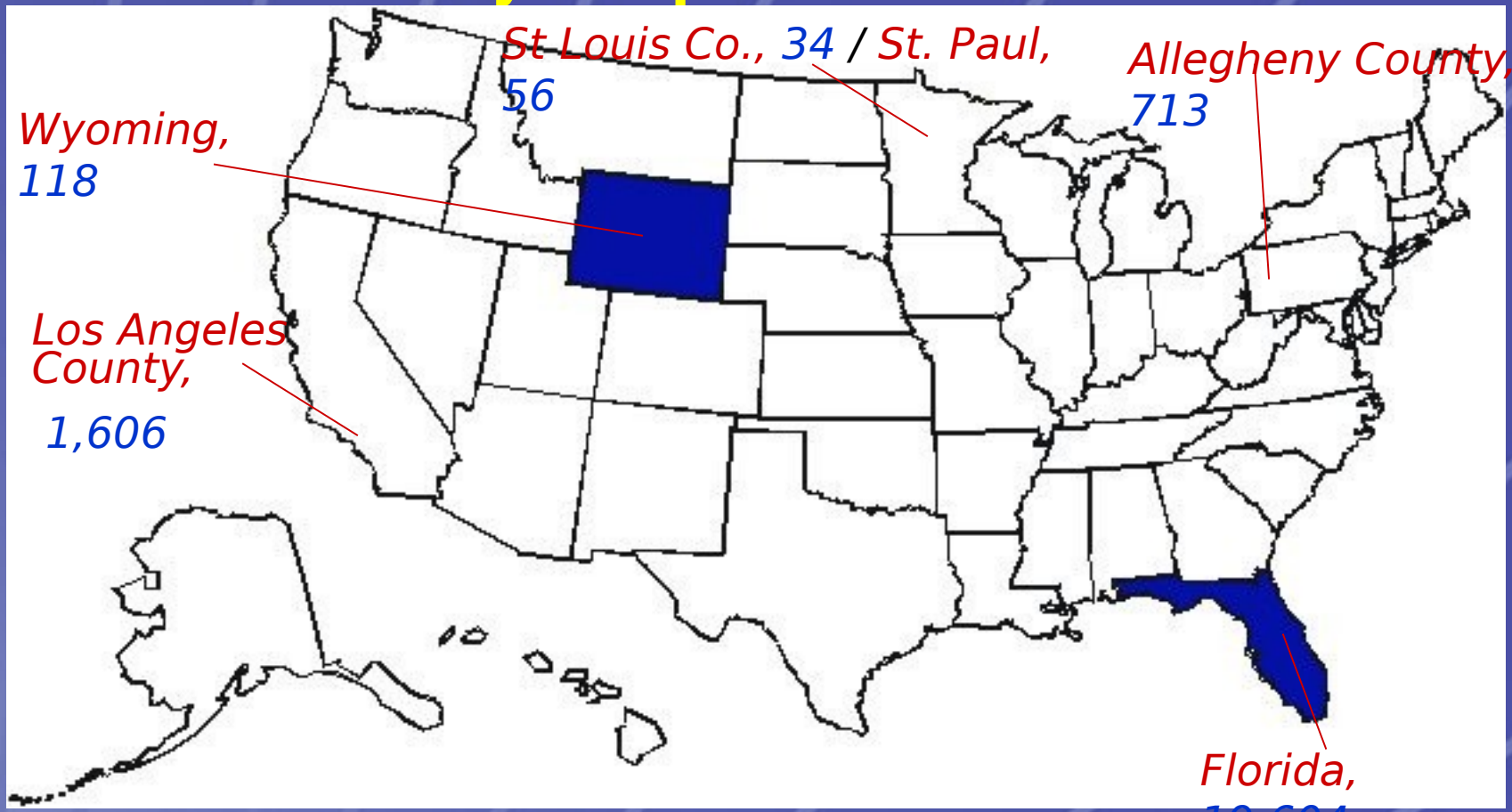


* Requests from federal, state, local, and tribal EH programs for assistance during outbreaks or other events

** Special initiatives would be federal or other agency sponsored research and efforts, i.e. Food Safety Initiative

*** Gaps would be areas of need known by staff to exist based on their experience or identified by partners

Swimming Pool Inspections
Selected States and Counties, May - September 2002



N = 22,131

Swimming Pool Inspections
Selected States and Counties, May - September 2002

Summary

- 21,561 Violations Of Pool Codes
- 45.9% - Inspections - No Violations
- 54.1% - One Or More Violations (Median: One; Range: One to 12)
- 8.3% - Inspections - Immediate Closure

Violations

- 38.7% - Water-chemistry
- 38.6% - Filtration / Recirculation Sy
- 22.7% - Policy / Management

N = 22,131

Swimming Pool Inspections
Selected States and Counties, May - September 2002

Summary of Violations for Typed-Pools

- Inspections Specifying Type of Pool - 24.3%

Violation Range for Critical Factors

- Free Chlorine Residual - 4.5% - 18.4%
- pH Range - 4.7% - 16.7%
- Filtration / Recirculation System - 34.0% - 7
- Certified Pool Operator (where required) - 0% - 35.7%

N = 22,131

Violations by Type of Pool – Hotel / Motel

Selected States and Counties, May - September 2002

Type of violation	Hotel / Motel (%) (N = 878)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	14.0	13.1
pH ~	10.5	9.4
Other water chemistry	18.0	21.4
Filtration / Recirculation	37.1	41.4
Policy/ Management		
Test Kit	4.8	3.0
Pool Operator Training	14.1	27.6
Log/ Record-Keeping	12.7	13.9

Violations by Type of Pool – Condo / Apts.

Selected States and Counties, May - September 2002

Type of violation	Condo / Apts. (%) (N = 4147)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	15.7	13.1
pH ~	14.7	9.4
Other water chemistry	26.4	21.4
Filtration / Recirculation	40.4	41.4
Policy/ Management		
Test Kit	2.8	3.0
Pool Operator Training	35.7	27.6
Log/ Record-Keeping	15.0	13.9

Violations by Type of Pool – School / University

Selected States and Counties, May - September 2002

Type of violation	School / Univ. (%) (N = 81)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	8.8	13.1
pH ~	5.0	9.4
Other water chemistry	28.4	21.4
Filtration / Recirculation	49.4	41.4
Policy/ Management		
Test Kit	2.5	3.0
Pool Operator Training	7.6	27.6
Log/ Record-Keeping	6.3	13.9

Violations by Type of Pool – Private Club

Selected States and Counties, May - September 2002

Type of violation	Private Club (%) (N = 476)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	13.1	13.1
pH ~	6.1	9.4
Other water chemistry	14.1	21.4
Filtration / Recirculation	51.7	41.4
Policy/ Management		
Test Kit	1.1	3.0
Pool Operator Training	9.8	27.6
Log/ Record-Keeping	15.6	13.9

Violations by Type of Pool – Wading / Kiddie

Selected States and Counties, May - September 2002

Type of violation	Wading / Kiddie (%) (N = 539)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	18.4	13.1
pH ~	16.7	9.4
Other water chemistry	13.2	21.4
Filtration / Recirculation	39.1	41.4
Policy/ Management		
Test Kit	3.4	3.0
Pool Operator Training	6.0	27.6
Log/ Record-Keeping	13.1	13.9

Violations by Type of Pool – Water Parks

Selected States and Counties, May - September 2002

Type of violation	Water Parks (%) (N = 192)	Total (%) (N= 6545)
Water Chemistry		
Free Cl_2 ~	7.8	13.1
pH ~	4.7	9.4
Other water chemistry	3.6	21.4
Filtration / Recirculation	36.5	41.4
Policy/ Management		
Test Kit	0	3.0
Pool Operator Training	0	27.6
Log/ Record-Keeping	3.8	13.9

Violations by Type of Pool – Medical / Therapy

Selected States and Counties, May - September 2002

Type of violation	Medical / Therapy (%) (N = 17)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	14.3	13.1
pH ~	13.3	9.4
Other water chemistry	47.1	21.4
Filtration / Recirculation	64.7	41.4
Policy/ Management		
Test Kit	12.5	3.0
Pool Operator Training	0	27.6
Log/ Record-Keeping	17.6	13.9

Violations by Type of Pool – Municipal

Selected States and Counties, May - September 2002

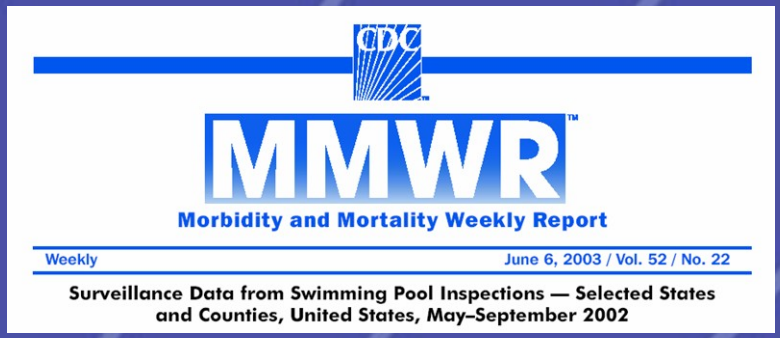
Type of violation	Municipal (%) (N = 112)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	4.5	13.1
pH ~	13.6	9.4
Other water chemistry	8.0	21.4
Filtration / Recirculation	76.8	41.4
Policy/ Management		
Test Kit	3.6	3.0
Pool Operator Training	0	27.6
Log/ Record-Keeping	8.9	13.9

Violations by Type of Pool – Campgrounds

Selected States and Counties, May - September 2002

Type of violation	Campgrounds (%) (N = 103)	Total (%) (N = 6545)
Water Chemistry		
Free Cl_2 ~	5.0	13.1
pH ~	11.1	9.4
Other water chemistry	22.3	21.4
Filtration / Recirculation	34.0	41.4
Policy/ Management		
Test Kit	3.9	3.0
Pool Operator Training	0	27.6
Log/ Record-Keeping	13.9	13.9

Discussion / Findings


MMWR
Morbidity and Mortality Weekly Report
Weekly June 6, 2003 / Vol. 52 / No. 22
Surveillance Data from Swimming Pool Inspections — Selected States and Counties, United States, May–September 2002

Limitations

- Limited geographical collection
- Inconsistency in recording information
- Lack of detail to data collected

Conclusions

- Inspection data systems are useful t
- The more details recorded – the bett
- Data analysis can show trends
- Prevention plans can be evidenced-based

The Systems Approach

Prevention Points within the Syste

Process
Disinfection
Filtration

Economics
Wages & Benefits
Equipment Costs

Environmental Antecedents

Equipment
Pumps
Filters

People
Mgmt Policies
Training

Outbreak

Increasing Numbers & Severity of Illne

Outbreak

CDC

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Division of Parasitic Diseases

Healthy Swimming 2003

Site Contents

Audiences

- General Public
- Pool Staff
- Public Health Professionals
- Travelers
- En Español

Specific Information

- Brochures
- Fact Sheets
- Posters
- Questions and Answers
- Prevention Steps
- Newsletters for Pool Staff
- Disinfection Guidelines
- Technical Information
- Outbreak Response
- Oceans, Lakes, and Rivers
- State Information

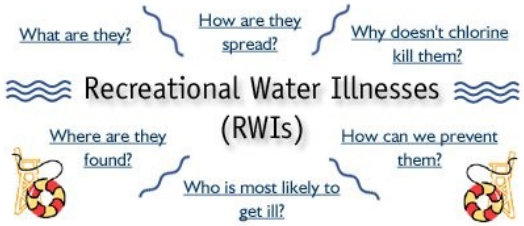
DPD Home

- Division of Parasitic Diseases

Swimming, one of the most popular activities in the country, is a fun, active, and healthy way to spend leisure time. Every year, millions of people visit "recreational water" sites, such as swimming pools, water parks, hot tubs, lakes, rivers, or the ocean.

Over the past century, the use of modern disinfection systems in pools and environmental improvements in our lakes, rivers, and oceans has improved the quality of recreational water. Despite this, there has been an increase over the past decade in the number of outbreaks of illness associated with swimming.

This Web site provides information for swimmers, pool operators, and public health professionals to improve the swimming experience by raising awareness about the spread of recreational water illnesses (RWIs). Practicing "Healthy Swimming" behaviors should reduce the risk of getting ill. Click on the links below to learn more about RWIs.


What are they?
How are they spread?
Why doesn't chlorine kill them?
Recreational Water Illnesses (RWIs)
Where are they found?
How can we prevent them?
Who is most likely to get ill?

Put the mouse on the life preservers in the image below to view six "PLEAs" that promote healthy swimming.

What's New in 2003

- MMWR: Analysis of pool inspection data
- Updated Brochure
- 12 Steps for Prevention of Recreational Water Illnesses (RWIs)
- Newsletter for Pool Staff
- Fact Sheets
  - Vomit and Blood in Pools
  - Fecal Accident Response for Pool Staff
  - Cleaning up Body Fluid Spills

New multimedia and interactive movies available

- Brochure
- Take the Healthy Swimming IQ quiz

Protect yourself and your family from injury and chronic disease

- Drowning
- Physical Activity
- Preventing Electrocutions in or around Swimming Pools
- Sun exposure, sunburn, and skin cancer

www.cdc.gov/healthyswimming

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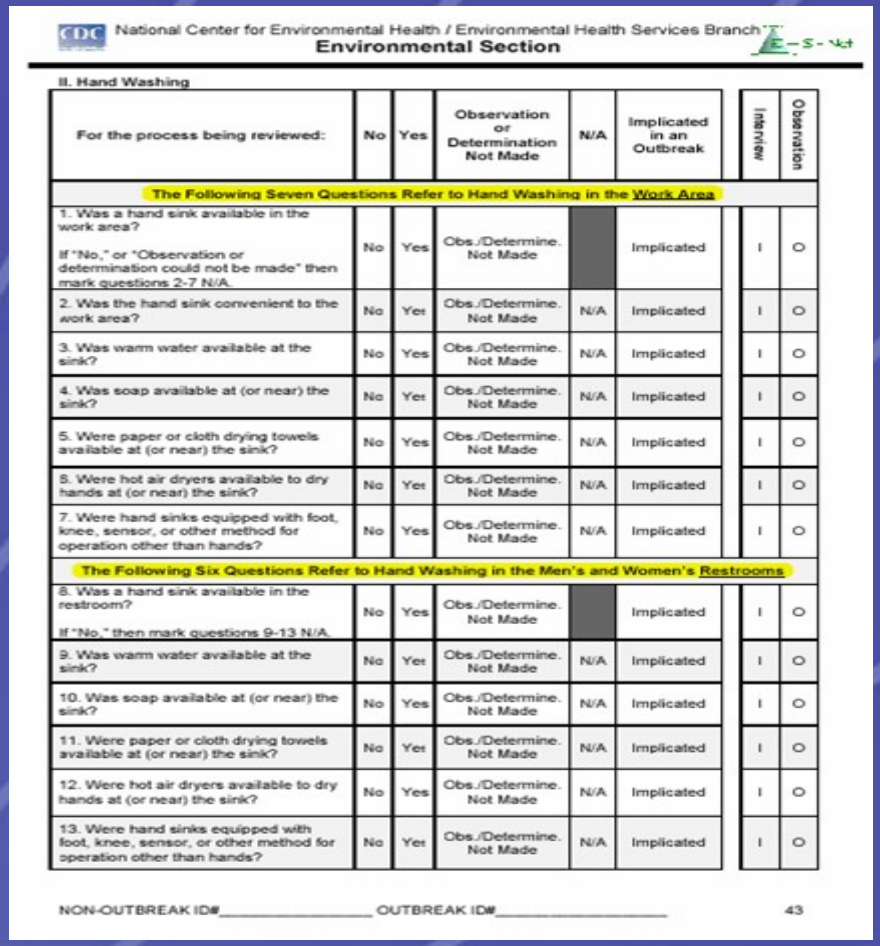
Good Surveillance Systems

- Account for all of the variables
- Answers need to be given for data validity / interpretations
- Four possible responses:
  - Yes
  - No
  - Not Observed or
  - Not Applicable



National Center for Environmental Health / Environmental Health Services Branch
Environmental Section

II. Hand Washing

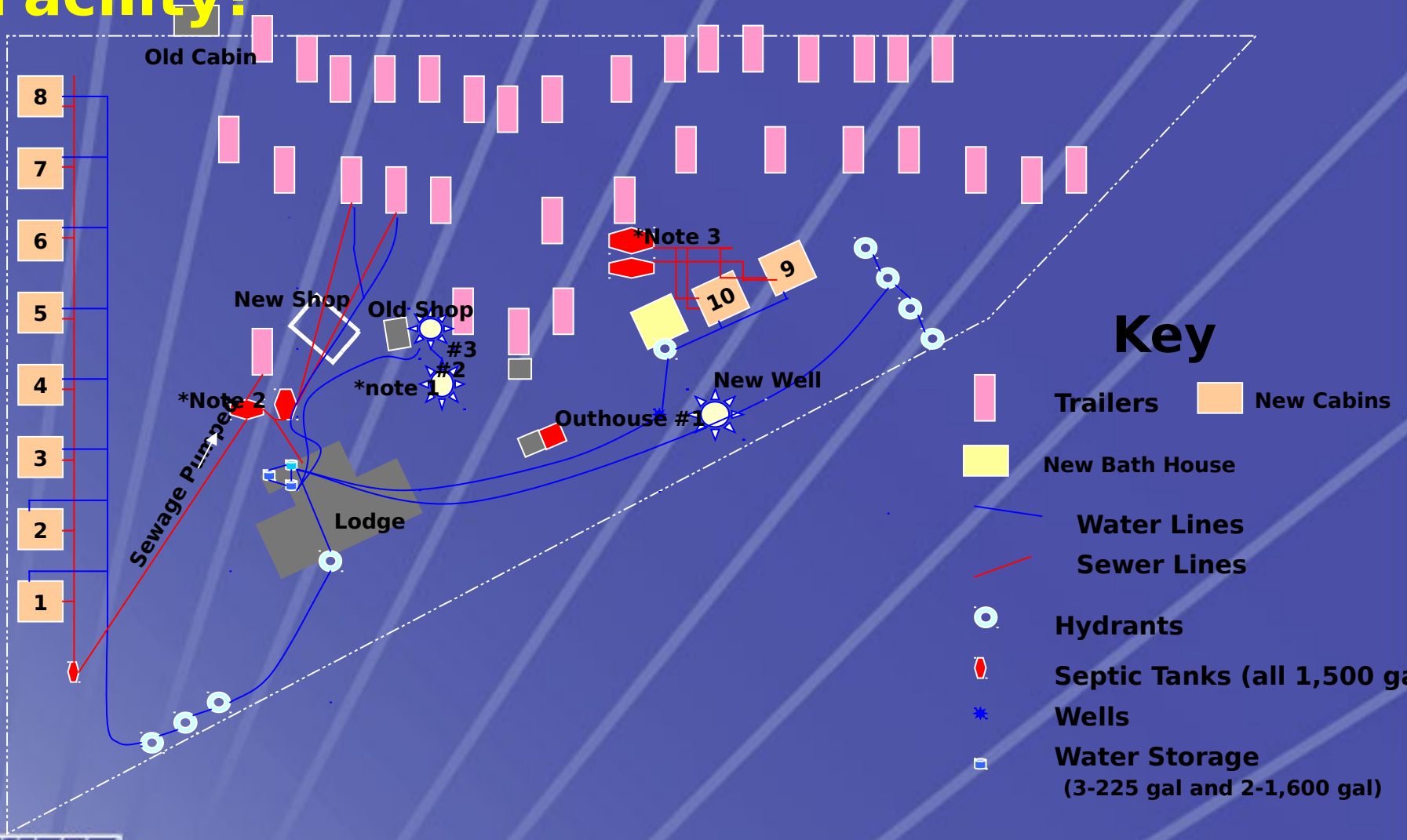
For the process being reviewed:	No	Yes	Observation or Determination Not Made	N/A	Implicated in an Outbreak	Interview	Observation
The Following Seven Questions Refer to Hand Washing in the Work Area							
1. Was a hand sink available in the work area? If "No," or "Observation or determination could not be made" then mark questions 2-7 N/A.	No	Yes	Obs./Determine. Not Made		Implicated	I	O
2. Was the hand sink convenient to the work area?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
3. Was warm water available at the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
4. Was soap available at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
5. Were paper or cloth drying towels available at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
6. Were hot air dryers available to dry hands at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
7. Were hand sinks equipped with foot, knee, sensor, or other method for operation other than hands?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
The Following Six Questions Refer to Hand Washing in the Men's and Women's Restrooms							
8. Was a hand sink available in the restroom? If "No," then mark questions 9-13 N/A.	No	Yes	Obs./Determine. Not Made		Implicated	I	O
9. Was warm water available at the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
10. Was soap available at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
11. Were paper or cloth drying towels available at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
12. Were hot air dryers available to dry hands at (or near) the sink?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O
13. Were hand sinks equipped with foot, knee, sensor, or other method for operation other than hands?	No	Yes	Obs./Determine. Not Made	N/A	Implicated	I	O

NON-OUTBREAK ID#_____ OUTBREAK ID#_____ 43

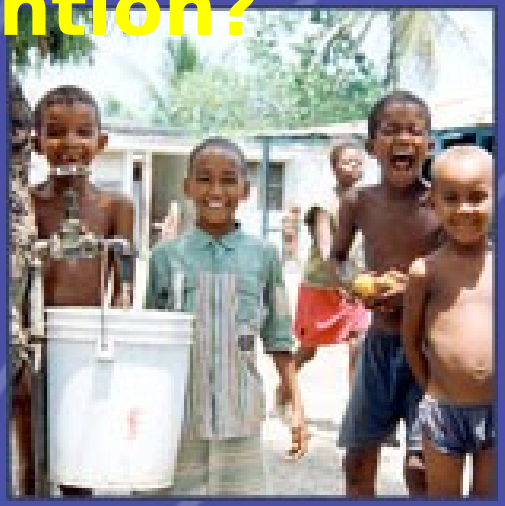
Example of Pool Inspection / Surveillance Dataset

- Information
- Water Feature Profile – Type, Location, Disinfection
  System, Recirculation System, Physical Facilities,
  Safety
- Inspection Data
  - Administrative – What, Who, When
  - General Facility – Where, Type, Training, Utilities,
    Restrooms, Procedures, Test Kits, Records
  - Water Feature – Water Chemistry, Disinfection
    System, Recirculation System, Physical Facilities,
    Safet

What Data is Available at this Facility?



How Can I Use My EH Inspection and Other Data for Disease Prevention?



- Food Safety
- Water
- Wastewater
- Vector Control
- Indoor Air Quality
- Housing
- Outbreak Investigations

If I Can't, What Is the Use of Keeping It?

Acknowledgements

Inspections

State and Local Environmental Health Program Staff

Data Contributors

D Cinpinski - Allegheny County Dept of Health (PA)
B Bibler - Florida Dept of Health
R Kebabjian - Los Angeles County, Dept of Health Services (CA)
R Georgesen - St. Louis County Dept of Public Health (MN)
P Kishel - City of St. Paul, License, Inspections, and Environmental Protection (MN)
D Finkenbinder & N Bloomenrader, Wyoming Dept of A

Centers for Disease Control and Preventio

C Otto - National Center for Environmental Health
M Beach - National Center for Infectious Diseases
J Roberts - National Center for Infectious Diseases
L Mirel - National Center for Infectious Diseases
K Day - Public Health Prevention Service
K Bauer - Public Health Prevention Service

Historical Florida Pool Photos – Professional Pool Operators Association

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